Public Documents of Maine:

BEING THE

ANNUAL REPORTS

OF THE VARIOUS

PUBLIC OFFICERS AND INSTITUTIONS

FOR THE YEARS

1872-73.

AUGUSTA:
SPRAGUE, OWEN & NASH, PRINTERS TO THE STATE.
1873.

SIXTH REPORT

OF THE

COMMISSIONERS OF FISHERIES

OF THE

STATE OF MAINE,

FOR THE YEAR

1872.

AUGUSTA:
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REPORT.

To the Governor and Executive Council:

Your Commissioners have the honor to present the following report of their doings for the year eighteen hundred and seventy-two, in accordance with the requirements of the statute.

Fishways.

A tour of inspection of the fishways of the State, was made by your Commissioners immediately after their appointment. These fishways are all of the Foster pattern, and generally answer a good purpose for salmon, but the force of the current through them is too great, the eddies and whirls too numerous and powerful to make them readily accessible to shad and alewives. A fair percentage of alewives succeeded in making their way up the fishways at Spencer and Warren, but after modifications and changes had been made in the arrangement of the arms and flanges, in the sides of the troughs or sluices, suggested by Mr. Wetherbee, the Warden, and promptly and genially provided for by the mill owners, the fish went up in increased numbers and with less effort. We afterwards visited Mr. Brackett, one of the Massachusetts Commissioners, at Winchester, to examine his Patent Fishway, and there found in operation every principle we had been blindly groping for, in our experiments at Warren. Mr. Brackett generously offered us the gratuitous use of his Patent for our State.

The fishway at Dennysville, not answering its required purpose, the Messrs. Lincoln had constructed one over the Ledge of Rocks practicable for both salmon and alewives.

The Lower fishway on the St. Croix, at Milltown, on the New Brunswick side, was found effectually stopped by logs, but was promptly cleared at the first intimation made to Mr. Curran, one of Mr. Inspector Venning's officers. W. H. Venning, Esq., Inspector of Fisheries for New Brunswick and Nova Scotia, writes: "I would respectfully urge that you instruct Mr. Benjamin W.

French, Warden of the American side, to enforce the law against sawdust and mill rubbish, as unless your side of the river is looked after, our officer can do little good." Allow us to suggest to your attention such an amendment of the law in relation to mill rubbish, edgings, &c., as will enable us to do exact justice to a justice to a neighboring and friendly State.

The fishway at the Basin Mills, Orono, is not adequate to the requirements of so important a position. This is the only passage for the salmon of the Penobscot, to their spawning grounds on the upper waters of the river and its numerous tributaries. This fishway should not only be enlarged, but made accessible to shad and alewives. The inhabitants of all the up river towns are moving for fishways. Sebec, Dover, Foxcroft, Milo, Brownville, Howland, Mattawamkeag, etc., all demand the restoration of salmon, shad and alewives, to their rivers. A good, clear, practicable highway, must be insured to the fish from the most remote tributary where they spawn, to the ocean. The provisions of the statute allow your Commissioners to order such fishways to be built according to such plans by them furnished, as in their judgment are required, and the cost to be paid by the mill owners; but in the present instance, it is so difficult for any one but a professional engineer, and one of acknowledged experience, skill and ability, to decide upon the best plan, that we are unwilling to subject mill owners, who have been so prompt and liberal, to the expense of uncertain experiment.

We would therefore suggest that an appropriation of one thousand dollars be made for the expense of professional aid and experiments in this and like difficult cases.

Distribution of Freshwater Fish.

Nothing of any moment has been done in the matter of distributing new varieties of freshwater fish to the different streams, lakes and ponds of the State.

The black bass turned into Fitts, Phillips and Newport ponds three years ago by Mr. Atkins, have multiplied largely, and we shall be able to draft from those nurseries to such waters as it is advisable to stock with them this coming year; but we do not regard this distribution of new varieties of freshwater fish as of much importance to a State possessed of such singular wealth in her trout and land-locked salmon as is Maine. We probably possess the best stocked inland waters in the United States, while

our Legislature has provided good laws for their protection. Wardens alone cannot enforce those laws so long as the citizen has not the moral force or courage to enter complaints or furnish evidence to bring to justice a class of vagabonds too lazy to work, too cowardly to steal, who will spear and net the fish upon their spawning beds ; who will destroy our fur and game animals ; our mink, our moose, our deer, our partridges, even in the act of parturition, so long as they can realize the price of a glass of whiskey from their spoil. Some hundreds of fish taken on the spawning bed and offered in our markets, have been seized and destroyed during the past year. Measures have been taken for the severe punishment of any future infraction of the law. We ask for the coöperation of every good citizen. While upon this subject of the wholesale destruction of our fish, we cannot refrain from referring to the no less criminal act of any individual, company or corporation, to destroy the fish belonging to a whole people, by emptying the waste, or refuse or chemicals from any works, or factory, or tannery, or mills, into a pond, stream or river. We respectfully call your attention to this subject.

Propagation of Salmon.

Twenty-one thousand young salmon, the product of ova placed in the hatching troughs of Messrs. Crockett and Holmes, at Norway, by your late Commissioner, Mr. Charles G. Atkins, were turned into a small brook emptying into the Androscoggin river, during the month of May. These little fish were visible during the whole of the summer and first of autumn, seeking their food in the waters of the brook, and daily making their appearance as high up as the hatching house, where they were first turned in. They disappeared during the high water of the first fall rains, and in all probability have made their way down to the ocean, to re-appear as grilse and in due course as salmon.

The distinguished success of Mr. Atkins last year in taking salmon spawn, encouraged him to make arrangements to organize an extensive establishment for that purpose at Bucksport, several of the New England Commissioners combining and furnishing the requisite means. After this project was matured, Prof. Baird, United States Commissioner of Fisheries, contributed largely (in behalf of the Government) to the fund, and expressed the intention in the future to assume the whole expense and distribute the eggs to such States as would take charge of and stock their rivers

with the product. The purpose was intimated to re-stock all the original salmon producing rivers of Maine. We on our part guarantee to hatch and distribute all that the Government will place in our keeping. We understood the policy of the government to be to place in the hands of your Commissioners every year, a number of salmon eggs, equal to the annual product of each river in salmon, when the rivers are in full stock.

At a time when we are bringing our beef supplies from the plains of Texas, (and much of it diseased) at a cost that enhances the expense of living to a degree that carries the price of labor to a point that destroys the profit of the employer without adding to the means of the employed, the introduction of an article of food into common use that has hitherto been mostly confined to the tables of the rich, must have an important bearing upon the whole industrial economy of our social system. The home products of our soil and labor that constitute those necessaries of life that are known as clothing, are still reasonably cheap in our country and within the reach of all. But those products of our land and water, known as food, without which all that we know as life must cease, are enhancing in cost faster than the corresponding industries of our producing system will warrant. A great wrong was perpetrated against our people when the salmon, shad and alewives were excluded from our rivers. That wrong must be compensated for. Fishways must be constructed over every dam, and made accessible to every species of migratory fish. A grave error is committed in the thought that fishways in the fullest possible farming of our waters to fish, necessarily detract from the use of the entire power of our water privileges. We deny that any antagonism exists between lumber and fish. We do not ask for one pound of the power. We only require that the water that flows over the dam be conducted down at such a grade that it be made accessible to migratory fish. We only ask for the restoration of a small portion of a right held *solely* by the *sufferance* and *courtesy* of the people. The prosperity of manufacturers is to be found in cheap food. Contracting the limits within which the up-river fishermen may capture the few stray fish that escape the fenced channel below tide water, is not going to increase the return of fish. To quote the apposite words of the Hon. Robert B. Roosevelt, "The fishermen along the coast are jealous of those on the upper waters; the former complain that the latter destroy the parents while they are spawning, and in this way destroy the

race; while the latter complain that the coast fishermen use improper and murderous methods of fishing, and kill out the entire supply before they can have a chance to reach their spawning beds. Unfortunately both these complaints are too well founded. Each class takes all it can, blind to the future, which presses closer on the heels of such want of foresight; it looks only to immediate gratification, and accepts the proverb 'After me a famine.'"

Let us not precipitate ruin by unwise legislation. The trouble is dearth of fish, and *not* up-river fishermen nor restricted limits below tide water.

Of such deep importance do we consider this whole subject to the prosperity and interest of our State, that unwilling to submit it upon our own experience, evidence and deduction alone, we addressed a letter to Prof. Baird, of the Smithsonian Institute, and Chief of the United States Bureau of Fish and Fisheries. We annex his reply. It requires but to be read to command your most earnest thought and attention.

WASHINGTON, D. C., November 16, 1872.

MY DEAR SIR,—I am in receipt of your letter, asking my opinion as to the probable cause of the rapid diminution of the supply of food-fishes on the coast of New England, and especially of Maine. The fact, as stated, needs no question; it is too patent to the experience of every man who has been interested in the fisheries, whether as a matter of business or as an amateur. An examination of the early records of the country in which the subject is referred to cannot fail to convince the most skeptical.

We are all very well aware that fifty or more years ago, the streams and rivers of New England emptying into the ocean were crowded, and almost blockaded at certain seasons, by the numbers of shad, salmon and alewives seeking to ascend, for the purpose of depositing their spawn, and that, even after these parent fish had returned to the ocean, their progeny swarmed to an almost inconceivable extent in the same localities, and later in the year descended to the sea in immense schools. It was during this period that the deep sea fisheries of the coast were also of great extent and value. Cod, haddock, halibut, and the line fish generally, occupied the fishing grounds close to the shore, and could be caught from small open boats, ample fares being readily taken within a short distance of the fishermen's abodes, without the necessity of resorting to distant seas. Now, however, the state of things is entirely different. The erection of impassable dams

upon the waters of the New England States, and especially of the State of Maine, has prevented the upward course of the anadromous fishes referred to, and their numbers have dwindled away, until at present they are almost unknown in many otherwise most favorable localities.

The fact has been observed, too, that with the decrease of these fish there has been a corresponding diminution in the numbers of the cod and other deep-sea species near our coasts; but it was not until quite recently that the relationships between the two series of phenomena were appreciated as those of cause and effect. Halibut, it is believed, can be reduced in abundance by over-fishing with the hook and line, but experiences in Europe and America coincide in the confirmation of the opinion that none of the methods now in vogue for the capture of fish of the cod family (including the cod, haddock, pollock, hake, ling, etc.) can seriously affect their numbers. Fish, the females of which deposit from one to two million of eggs every year, are not easily exterminated unless they are interfered with during the spawning season, and as this takes place in the winter and in the open sea, (the spawn floating near the surface of the water,) there is no possibility of any human interference with the process. Still, however, these fish have become comparatively very scarce on our coast, so that our people are forced to resort to far distant regions to obtain the supply which formerly could be secured almost within sight of their homes.

It is now a well established fact that the movements of the fishes of the cod family are determined; first, by the search after suitable places for the deposit of their eggs; second, by their quest of food. Thus, the cod, as a summer fish, is comparatively little known on the coasts of northern Europe; but as winter approaches, the schools begin to make their appearance on the northwestern coast of Norway, especially around the Loffoden Islands, arriving there finally in so great numbers that the fishermen are said to determine their presence by feeling the sounding lead strike on the backs of the fish.

Here they spend several months in the process of reproduction, the eggs being deposited in January, and the fishery being prosecuted at the same time. Twenty-five to thirty thousand men are employed in this business for several months; at the end of which the fish disappear, and the fishermen return to their alternate occupations as farmers and mechanics. The fish are supposed to move off in a body to the Grand Banks, which they reach in early summer, and where they fatten up and feed until it is time for

them to return again to the northeast. It is believed that the great attraction to the cod on the Banks, consists in great part of the immense schools of herring or other wandering fish, that come in from the region of the Labrador and New Foundland seas, and which they frequently follow close in to the shore, so that they are easily captured.

It is well known that the presence or absence of herring determines the abundance of hake and cod on the Grand Manan Fishing Banks, the fishes of the first mentioned family having a peculiar attraction to carnivorous fish of all kinds. It is, however, the anadromous fishes of the coast which bring the cod and other fishes of that family close in upon our shores. The sea herring is but little known, outside of the region of the Bay of Fundy, excepting in September and October, when they visit the entire coast from Grand Manan to Scituate, for the purpose of depositing their spawn; this act depending upon their finding water sufficiently cold for their purposes, a condition which of course occurs later and later in the season, in going south.

In the early spring, the alewives formerly made their appearance on the coast, crowding along our shores and ascended the rivers in order to deposit their spawn, being followed later in the season by the shad and salmon. Returning when their eggs were laid, these fish spend the summer along the coast; and in the course of a few months were joined by their young, which formed immense schools in every direction, extending outward, in some instances, for many miles. It was in pursuit of these and other summer fish, that the cod and other species referred to, came in to the shores; but with the decrease of the former in number the attraction became less and less, and the deep sea fishes have now, we may say, almost disappeared along the coast.

It is therefore perfectly safe to assume that the improvement of the line fishing along the coast of Maine is closely conected with the increase in number of alewives, shad and salmon; and that, whatever measures are taken to facilitate the restoration of these last mentioned fish, to their pristine abundance, will act, in an equal ratio, upon the first mentioned interest. The most important of the steps in question are the proper protection of these spring fish, and the giving to them every facility needed for passing up the streams to their original spawning grounds; this is to be done of course by the construction of suitable fishways and ladders. The real question at issue in regard to the construction of these fishways is, therefore, after all, not whether salmon shall become more plentiful, so that the sportsmen can capture them

with the fly, or the man of means be able to procure a coveted delicacy in large quantities and at moderate expense. This is simply an incident; the more important consideration is, really, whether the alewife and shad shall be made as abundant as before, and whether the cod or other equally desirable sea fish shall be brought back to our coast, so that any one who may be so inclined, can readily capture several hundred weight in a day.

The value of the alewife is not fully appreciated in our country. It is in many respects superior to the sea herring as an article of food; is, if anything, more valuable for export; and can be captured with vastly less trouble, and under circumstances and at a season much more convenient for most persons engaged in the fisheries.

I have already extended this letter to an unreasonable length, and must therefore bring it to a close, with the assurance, however, that all the propositions I have thrown out can be amply substantiated.

Very truly yours,

SPENCER T. BAIRD,
U. S. Commissioner of Sub-Fisheries.

E. M. Stilwell, Esq., Bangor, Maine.

A liberal expenditure in restoring the salmon, shad and alewives to even the upper and remote tributaries of all rivers where they were once plenty; a firm, manly coöperation of all our population in enforcing our laws for the preservation of all our fishes; a continuance of the liberal, kindly feeling of our mill owners, and their aid, advice and energy in constructing our fishways; these will bring back prosperity and plenty to many a far back country home, will restore many a sea coast village now lamenting its lost fare for net or line.

PROPOSED LEGISLATION.

In the very able report of Mr. Charles G. Atkins, for 1871, the following remarks occur:

"The lower dam at Brunswick is still unprovided with a fishway. It is owned by a large number of individuals, who are divided in sentiment on the question of complying with the orders of the Commissioner, and have thus failed to come to any agreement. While some of the owners are desirous of doing their share towards the discharge of the common obligation, others demur, and no one is willing to assume the responsibility and cost of the fishway unless the others will bear their share of the bur-

den. Meanwhile the powers of the Commissioner are exhausted in prescribing the fishway. The only remaining step is a suit against some one of the proprietors, and this the Commissioner is not authorized to bring. I submit whether here is not a case showing the need of further legislation; whether since *each* owner is individually liable for the penalty in case of failure to meet the requirements of the Commissioner, there should not be an express provision of law, that any owner may call a meeting of owners, as provided in chapter fifty-seven of the revised statutes in the case of repairing a dam, and whether in case the majority refuse to build the fishway it should not be made lawful for *any* owner to build it, and recover from the others their share of the expense."

Although, relying upon the promises made to us when we visited Brunswick in the spring, by the copartners in the above property, we sincerely believe the circumstances that led to the proposed alteration in the law have passed away, we earnestly advocate the passage of a similar law, as it may prove a necessity in some future case. The fishway in question would have been constructed the past season had it been possible in the unprecedented high stage of water. The large number of young salmon put into the Androscoggin last April; the intention of your Commissioners to put in a like number every year; the promise of the United States government to enable them to increase the yearly supply of young fry; the application for fishways at Lisbon; the introduction of shad and alewives in tributaries and at other points, we hope will lead to earnest effort and sympathy of friendly action from all parts of the State.

During the session of 1871, the law requiring a forty-eight hours' close-time for salmon, shad, alewives and bass, on the Penobscot, Androscoggin and Kennebec rivers, was repealed. During the session of 1872, the law governing the fishery above tide water was so amended as to increase the distance from fishways, dams, &c., within which fishing was prohibited, from two hundred to five hundred yards. While your Commissioners do not admit that the distance prescribed within which fishing is prohibited is too great, it is their conviction that, taken in connection with the abolition of the close-time for the owners of weirs, seins and nets, and increasing their privileges as to space, it is unjust to the fishermen above tide water. We would suggest for your consideration, whether a law restoring a close-time of two days in each week would not best meet the requirements of

the case. And whether all fishing, except with hook and line, both above tide water and at the weirs, should not cease on the first day of July. Your attention is called to the fact that we have no general law on our statute books prohibiting the destruction and cruel practice of grappling and spearing fish. We would advise that the special law enacted for the Rangely lakes be made the general law of the State.

Legislation is required to prevent the introduction and sale in our State, of fish, that our laws forbid to be either caught or sold here, during certain months, called close months. They are caught in violation of the laws of the State where they are captured, and sold here, and *vice versa*. It leads to much litigation, perjury and crime, makes it very difficult to effectively execute our laws, and in a sanitary light allows fish to be sold here as food, that our physicians have condemned as unhealthy and even directly promotive of disease. We hope that the legislatures of neighboring States may be induced to unite with us in passing laws that will effectually put an end to this criminal traffic.

Your attention is called to the annexed report of Charles G. Atkins, Esq., of the result of the year's operations at the Salmon Breeding Works at Bucksport. He has met with that brilliant success, which is the mathematical attendant upon equal enterprise, energy and intelligence. You will note that the cost of the salmon eggs has been reduced from forty dollars, which was the minimum wholesale price at which they could be purchased at the Canadian establishment, exclusive of transportation, &c., to less than five dollars per thousand, the present year. The whole product of the establishment is 1,500,000 to be divided between the subscribers to the fund, viz: The United States, the States of Connecticut, Massachusetts, Maine, Rhode Island, and one private gentleman, Mr. William Clift of Connecticut; each taking a portion according to the relative amount of their subscription. The United States Commissioner has expressed the intention of presenting to the State of Maine the greater part of his share; this will make the portion of our State several hundred thousand. We have made the promise and perfected the arrangements, to hatch and distribute in our rivers, all that are placed in our keeping.

All of which is respectfully submitted.

E. M. STILWELL, } *Commissioners*
HENRY O. STANLEY, } *of Fisheries.*

BUCKSPORT, December 6, 1872.

E. M. Stilwell and Henry O. Stanley, Commissioners of Fisheries of the State of Maine.

GENTLEMEN:—In compliance with your request, I have the honor to present the following account of the operations in collecting salmon eggs at Bucksport, during the season of 1872:

The preliminary trial at Orland last year, resulted in the collection of about 70,000 eggs, which were so well fertilized and so successfully packed and transported, that, according to the testimony of those who received and hatched them, they turned out better than any other salmon eggs they had ever received. About 21,000 of these eggs were hatched out at Norway, and have since, by your direction, been turned into a branch of the Androscoggin river.

The experiment proved the entire practicability of catching salmon in spring or early summer in the rivers or estuaries where salmon fishing is carried on as a business, confining them in fresh water even, if necessary in a small pond, and taking from them, in October and November, the ordinary breeding season, eggs and milt in normal quantity and condition. The cost of the enterprise, too, was such as to warrant the expectation that with the benefit of the first season's experience, eggs could be obtained at a much cheaper rate from this than any other available source. All of the parties to the original experiment therefore decided to subscribe to an enterprise on the same plan, but on a larger scale this year. *

From my experience in 1871, I was led to select (mentioned in my official report for last year as Spofford's pond), as the site of operations. This pond lies near Bucksport village, one mile from the Penobscot river, has an area of about 100 acres, and the water flowing to and from it is of a character well fitted for the maintenance of salmon in good health, and of a volume easily controlled. Its bottom being for the most part muddy, would induce the salmon when ready to spawn to seek the brooks, and there they

* While the collection of salmon was in progress, the United States Commissioner of Fisheries brought us his valuable assistance. The roll of the parties contributing to the enterprise is as follows:—Commissioner of Fish and Fisheries, United States; Commissioners of Fisheries, State of Connecticut; Commissioners of Inland Fisheries, State of Massachusetts; Commissioners of Fisheries, State of Maine; Commissioners of Fisheries, State of Rhode Island; Wm. Clift of Connecticut.

would be easily caught. The process of collection would involve cartage one mile, but that was not regarded as a serious obstacle.

A number of boats (dories) were rigged to transport the salmon in by opening grated holes fore and aft, so that when sunk half under the surface and towed after another boat, there would be a constant circulation of water through them. In these the salmon were brought from the weirs where they were caught to the landing in Bucksport. Here they were dipped out into wooden boxes full of water, hauled to the pond and turned in to shift for themselves. In this manner between six and seven hundred salmon were collected during June and July. The number that died at the time of transportation and soon after (in nearly every case, it is presumed, from effects of injuries received in catching or on the way from the weirs to the pond) was nearly one hundred. But in a few days after the last salmon were put into the pond, the deaths had nearly ceased.

During the summer and fall arrangements were made for catching the salmon again and caring for their eggs. For the latter purpose there was erected a hatching house seventy feet long and twenty-eight wide, furnished with sixteen wooden troughs, each one foot wide and sixty feet long, and supplied with water from the brook. The troughs were furnished with movable trays made of iron wire cloth, bordered by light wooden frames and smeared with a water-proof varnish to prevent rust. Spread in these trays, with a constant stream of water passing under and over them, the eggs would be safe from suffocation by sediment and could easily be turned out when necessary to pack them for transportation. The walls and roof were constructed with a view to the protection of the interior from external cold, and as a further precaution, two large stoves were provided.

The arrangements for catching the salmon were based on the supposition that they would choose for a spawning place running water rather than still, and gravelly rather than any other bottom, and would altogether avoid laying their eggs on muddy ground. A dam commands the outlet of the pond and here a sluice was constructed so that the salmon could easily run down out of the pond but could not get back into it, and a series of pens made of wooden racks was placed in the bed of the brook for convenience in assorting and keeping them. Other apparatus was used in the pond for the purpose of gathering the salmon near the outlet, that they might be more certain to find it when ready to spawn, and

for such as should escape these arrangements preparations were made in the small tributaries which it was presumed most of them would seek, rather than lay their eggs in the pond. These means proved fairly effective and the majority of the fish were caught.

Salmon began to run into the brook at the outlet in considerable numbers on the 27th of October. On the 28th a large number of eggs were taken. From that time till November 11th the spawing continued brisk, and a few eggs were taken as late as November 21st. The greater part of the eggs were taken at the outlet of the pond, a little more than a hundred thousand being obtained in a brook at the head of the pond. At the main works, as fast as the salmon came into the brook they were caught and examined, and as they were generally ripe the eggs were at once taken and fecundated. The mode of fecundation employed was what is known as the "dry method," which proved so successful last year, and the result of the second season's trial is even more satisfactory than that of the first. So complete is the fecundation that the loss from imperfection in that respect will not exceed two per cent. The eggs now lie in the hatching troughs awaiting development to that stage when it will be safe to transport those that are to be hatched elsewhere. I have made a careful estimate of the number of eggs lying in each of the four or five hundred trays, and the sum total is a trifle over a million and a half, (1,500,000.)

Altogether the result is most gratifying. The net product exceeds by several fold the whole number of salmon eggs heretofore obtained by the artificial method in the United States or imported from abroad. There have been used hitherto in replenishing the rivers of Maine, all told, the following lot of eggs, namely:

When obtained.	No. of Eggs.	Cost per thousand.	Whence obtained.
March, 1870,	8,000	$44 80	Canadian establishment at Wilmot's Creek.
Jan. 1871,	800	20 00	Miramichi river, through M. C. Edmunds.
Dec 1871,	21,750	18 09	Orland, Maine, collected by C. G. Atkins.
Total,	30,550		

Although it is rather early to state with exactness how many eggs you will receive from this year's operations, I cannot forbear making an approximate statement, for the sake of comparison. It is the intention, I understand, of the United States Commissioner to divide his share of the eggs among those States having waters

fitted for salmon. The number of eggs that you will receive from this source, added to those belonging to you as original subscribers, will undoubtedly amount to several hundred thousand. The cost, too, has been reduced from $44.80 which we paid in Canada, to $18.09 in 1871, and to less than $5.00 the present season.

After the statement of the above facts, it is almost superfluous to add that the success of the enterprise at Bucksport imparts a new aspect to the question of restoring salmon to our rivers. The difficulty, I may say the impossibility, of getting salmon eggs at prices we could afford to pay, was seriously retarding the work. We now have them by hundreds of thousands, and I believe that the operations at Bucksport are capable of extension till the product shall be several times greater than now. Though time alone can answer positively the question how many grown salmon will result from these vast quantities of eggs, there is good reason to believe that a considerable percentage will survive the many dangers that will assail them while young and defenceless, and will again seek the rivers where they have spent their infancy. It is worth observing that it will require but a very small percentage to pay all the cost of the operations. One per cent. would be ample for the purpose. But there is reason to believe that a much larger proportion will survive, and will suffice for the speedy repopulation of our barren rivers.

I trust, gentlemen, that the Legislature will place in your hands the means of carrying out to a successful completion the work so auspiciously begun.

Respectfully submitted,

CHARLES G. ATKINS.